Age	Unit	Distinctive features	Areal distribution and approximate acreage		ss (feet) Common range or average	Weathering characteristics	Terrain and vegetation	Conspicuous fossils	Inferred origin
Pre	esent reef and beach deposits	Fringing and barrier reefs, terraced ramps, and pedestals  Beach sand and gravel (mostly calcum carbonate), beach rock, and minor slightly emerged reef limestone.	Shoreline and offshore	Av	eneer				
z Gra	avel and sand on emerged ringing reef surfaces.	Poorly sorted gravel and sand, consisting of organically derived calcareous fragments	Linear patches parallel to and just inshore from east and north coasts 67 acres.	A v	eneer		Linear shallow trenches parallel to and border- ing coast Ordinarily supports thick growths of low, tangled brush	Recent types of Foraminifera, corals, and mol- lusks	Largely(?) debris washed up by great storms.  May in part include primary moat deposits.
u ر	rsh deposits	Soft, sticky blue-gray to grayish-brown muck in and around several permanent ponds and sloughs.	Depressions in west Saipan, south from Matansa Largest area surrounds Lake Susupe. 600 acre		eneer		Marshland Vines, ferns, and thickly tangled, tall, tough grasses About 11 acres of man-		
Re	cently emerged limesands	Loose, unbonded limesands, coarse and gravelly at places, contains numerous mollusk shells	Strip along west coast, south from northern  Matansa, widening toward south and interrupte	0-30 ?	8-12	Not noticeably affected by weathering	grove near Tanapag.  Gently sloping to flat coastal plain area. Supports low leguminous brushes, tangled	Recent marine shells and pottery shards to 6-ft. depth locally.	Complex shoreline and nearshore processes
All	luvium and clay wash	and Foraminifera.  Includes the primarily clay deposits of closed or nearly closed depressions and the linear clay	by areas of fill. 1,650 acres, half filled over Localized in depressions and valleys in many	0-30 ?	5±.	Locally gullied by rill wash at margins of	grasses, scattered trees Occurs in broad or narrowly linear depressions	,	
Ę	·	and gravel or clay deposits of out-draining valleys.	parts of Island. 900 acres  Two small patches at bluff top and on hillslope			larger deposits	Commonly cultivated, or with vegetation of grasses or vines.		Landslide, creep, and slump
RECE Pod De	posits formed by mass wasting	Chaotically mixed blocks of limestone naturally transported to or nearly residual on present sites.	above Hagman beach Coarse slump rubble of steep coasts 11 acres		•••				
Q Yo	unger terrace deposits	Mostly gravels and gravelly and sandy clays of reworked volcanic materials. Locally includes ferruginous quartz sands, and grades laterally into material mapped as clay wash.	Strip along and a little inshore from north part of west coast. Mostly from 20 to 80 feet above sea level 420± acres.	0-20 ?	8±	Nonsiliceous components are largely weath- ered to clay minerals and the deposit is mainly a gravelly clay	A gently rolling surface incised by small inter- mittent washes and gullies Cultivated, or with abandoned cane, grasses, or brush		Fluviatile outwash deposits from contiguous sources to the east
Та	napag limestone	Coral and algal-rich emerged reef limestone, highly porous and open in texture. Shell material of mollusks and coral skeletons generally well preserved, serving to distinguish from Mariana	Generally linear patches, parallel to and mostly adjacent to coast, and extending from sea	< 50	10-20?	Natural weathered surface very rough, with many pinnacles and irregular ridges of 1 to	Mantles lowest raised marine bench or occurs as isolated patches Surface mostly rough,	Mostly living species. Carbon-14 determina- tions and position indicate late Pleistocene	An emerged tropical fringing reef only slight modified by chemical erosion.
Po	st-Mariana terrace deposits	Iron-stained, locally quartz-rich, clay sands and minor gravels of volcanic source materials,	level to 100 ft above 1,050 acres.  Scattered irregular occurrences on seaward slopes of east-central Saipan and north shore	0-10	3-4	6 ft amplitude.  Some alteration to thin clay soil	with little soil, bare or with low brush  Mostly gently sloping surfaces planted to sugar- cane, small patches north of Laulau bay are	age	Fluviatile outwash deposits on marine bench
ш	Summary of formation	at elevations between 100 and 500 ft.  Generally coarsely porous, nonbedded to indistinctly bedded, dirty white to brownish, bioclas-	of Laulau bay. 136 acres.  Along south, east, north and northwest coasts,	0-500±	400 <u>+</u>	Mantled by generally thin clay soil through	steep, gullied, and swordgrass covered.  Wave-cut scarp and bench topography, mostly	Foramınıfera, corals, mollusks, echinoids, and	Bank, lagoonal, and reef-complex limestones
z w	Summary of tormation	tic to constructional limestones. Mollusk shells are ordinarily dissolved away and coral skeletons noticeably altered. Corals more abundant than in older rocks, and fossils of different sorts.	with largest areas of outcrop in south, in east peninsula, and in north Small outcrops else- where below altitudes of 500 ft 7,430 acres			which project irregular residual rock pinnacles as high as 6 ft. Rock is porous, caves and crevasses are common.	planted to cane, with small trees along prop- erty lines. Jungle on and near scarps and locally on beaches	algae mostly of living species	formed in shallow tropical waters.
ᄓ	Halimeda-rich facies	Bioclastic limestone distinctive in its rich concentration of the calcified, small, fan-shaped joints of the green alga Halimeda.	Southeast peninsula (I Naftan) and northeast part of east peninsula (Chacha) 1,130 acres	0-400 ?	7	Mantled by thin, brownish to black, somewhat powdery, clay soil through which project limestone pinnacles	Wave-cut scarp and bench topography Vege- tation of low thick brush, sparse swordgrass, cane, or jungle growth	As above	Concentrations of light-weight but large-grain calcareous debris, grading shoreward to va bioclastic and constructional deposits.
S T	Massive facies	Generally massive to obscurely bedded, dirty white to brownish, coarsely porous to cavernous, well-indurated, bioclastic to constructional limestone, with coral and algal remains common	Essentially as Mariana limestone in general, in- cludes considerably more than one-half of total ou	0-300±	200-300?	Same as second box above	Same as second box above	Same as second box above	Bank, lagoonal, and reef-complex deposits.  Probably similar to bulk of deposits presen
L E	Acropora-rich facies	and at places abundant A pink subfactes occurs locally.  Rich in broken fragments of the staghorn coral Acropora, mostly clay bonded, but in part fairly	crop of Mariana limestone 4,480 acres  A narrow northeast to southwest belt near centra		50?	Leaching of calcareous material leaves a thick, yellowish to red-brown, mottled clay cover.	Gently sloping to flat Mostly cultivated, but partly in old cane, tangled grass, or legum-	Staghorn Acropora the dominant fossil Associated rocks indicate post-Miocene age	forming west of Saipan.  Mainly locally derived though fragmentary states coral mixed with clay from adjacent gently states.
A NA		pure calcium carbonate with occasional Acropora colonies in position of growth  Conspicuously and coarsely fragmental limestones, generally rich in broken and randomly	part of south Saipan, and small occurrences nearby. 200 acres  Outcrops as a broad pelt along east coast from	0-400	200-300?	Where terrace deposits absent, it is generally	inous brush  Gently rolling cane-covered benches, with rare		ing volcanic shores.  Displaced coral and calcareous sediments, mi
₹	Rubbly factes	oriented coral and algal fragments, poorly indurated and with a generally large amount of clay contamination.	southern Kalabera at north to Chacha at south 1,300 acres			weathered to brownish clay soils 1-5 ft thick, around scattered limestone pinnacles.	tree-clusters, cut by shallow valleys and narrow ravines with jungle vegetation.	algae mostly of living species.	with clay from adjacent volcanic terrain alo a relatively steep coast.  Product of weathering of rubbly facies of Mari
	Clays over rubbly factes	Yellowish to brown and gray, mottled, kaolinitic clay	Western margin of eastern peninsula (Chacha) 320 acres	0-40		The unit is the product of weathering	Flat or very gently sloping clay-covered sur- faces, with rows of small trees growing along property lines.		limestone.
	der terrace deposits	Generally quartz-rich, iron-stained, clay sands and minor gravels of volcanic source materials, occurring in two sets between altitudes of 500 and 710 feet.	Saipan to southern slope of Mt Achugau	0-10	3-5	Locally yields thin clay soil which, with washing out of finer sediments, leaves surface film of quartz and magnetite.	Gently sloping to level surfaces, with growth of swordgrass or scrubby leguminous trees		Fluviatile outwash deposits on marine benche
- 5	Summary of formation	Mainly a complex of varied calcareous facies that intergrade with one another and are distinguished from other limestones on Saipan by their contained fossils. Commonest and most	21 acres.  Widespread. Underlies nearly half of Saipan, and forms most of axial ridge. 13,170 acres	0-1,000?	300-600?	Solution produces clay soils around residual limestone pinnacles, gradational contacts	Characterized by scarp and bench topography with general north-northeast orientation. Scarps as	Foraminifera, corals, echinoids, mollusks, decapods, and algae of early Miocene (Ter-	Clastic deposits of shallow to moderately deep tropical, marine waters
		distinctive facies is pure inequigranular limestone. Also includes impure limestone, as well as sandstone and conglomerate of volcanic source materials		0-500?	200-3002	where impure. Caves, crevasses, and sink- holes abundant  Mostly weathers to clay soil with outcropping	high as 600 ft. Benches with irregular sur- faces. Dense jungle when not cleared for cane Whaleback ridges and steep slopes interrupted	tiary e) age Essentially as above	Accumulated in marine waters of shallow to mo
	Tagpochau limestone undif- ferentiated.	Mostly somewhat impure limestones not conveniently placed in any named facies of Tagpochau limestone because of intermediate or mixed nature	Mainly in south-central Saipan in large, irregular patches extending south from Mt Tagpochau 600 acres.	0-3007	200 300	ledges but few or no residual pinnacles.	by abrupt scarplets Vegetation thick sword- grass, with local scrub trees and patches of jungle vegetation.		erate depth within reach of clay contamination from land
	Inequigranular facies	Generally massive to obscurely bedded, pure, compact and well-indurated, pink to white, in-	Widespread, especially in and adjacent to Mt Tagpochau and axial ridge north of Mt. Achuga	0-900±	200-500?	Weathers to red clay soil, around many smooth- surfaced residual pinnacles. Underground	Steep to vertical jungle-covered scarps sepa- rated by gently sloping benches, with cane and	Same as above.	Accumulation of mainly bioclastic calcareous sediments on open sea banks (or in lagoons
	Equigranular factes	equigranular limestone.  Well-bedded to massive, well-indurated to moderately indurated, mostly rather pure, generally	9,720 acres West-central and northern Saipan Especially	0-220±	100-200?	are caves, sinkholes, and crevasses.  Generally as above, except residual pinnacles	woodlots. Minor brush and swordgrass locally As above, except area east from Muchot point	Same as above	of moderate to shallow depth Same as above
L L		white, fine- to coarse-grained but dominantly equigranular limestone	in lowest terrace east from Muchot point, in As Matuis, and Fanunchuluyan bay 770 acres Mainly in eastern and southern part of east-centre		100+	sparse in outcrop area of west-central Saipan Weathers to clayey soil in sharp contact with	is low, and tends to overgrowth of vines, grasses, and brush.  Cliff bases and valley floors have 10°-20° slope	Same as above	Intermediate between above and below
N E	Rubbly factes	Unevenly indurated, fairly pure, generally white limestone that characteristically consists of aggregated angular fragments without obvious bedding. At places thinly bedded and locally with argillaceous impurities	Saipan in north-south belt along base of Tagpochau and I Agag cliffs. 350 acres.	0-1201	_	underlying limestone	angles Vegetation is old cane, a few trees, and minor jungle growth.		
O C E	Marly factes	Well-bedded, thinly to thickly bedded, marly limestone of generally yellowish color and moderate degree of induration.	Mostly in central Saipan, in irregular patches submarginal to mass of inequigranular facies 1,280 acres	0-500±	100-150?	Weathers to alkaline clayey soil around scat- tered residual limestone pinnacles. Transition generally sharp	Slopes as much as 20°, with occasional project- ing ledges and subdued scarplets. Vegeta- tion is swordgrass, with scattered brush, jungle growth, and cane	Larger Foraminifera, mollusks, echinoids, and algae of early Miocene age.	Accumulated in marine waters of shallow to moderate depth within reach of clay contamination from land
M I C	Tuffaceous facies	Poorly indurated, mostly thin-bedded, somber colored, calcareous rocks that include varying and generally large proportions of reworked andesitic materials	Mainly in west and south-central Saipan, west, south, and southeast of Mt. Falofofo. Few small patches in north 390 acres	0-170±	100-150?	Dependent on proportion of andesitic contam- inants More impure phases form clay soil over rotted rock Deep and extensive resi- dual clays described below	Moderate slopes that locally pitch into sharp valleys or border low scarps of purer limestones. Vegetation varied	Foraminifera, staghorn coral (Acropora),occasional mollusks, and echinoid fragments of early Miocene age	Accumulated in tropical marine waters of shall to moderate depths adjacent to residual volcanic highs.
12	Clays over tuffaceous and marly factes.	Mottled and banded reddish-brown, yellowish-brown, red, gray, and white clays, plastic when wet Banding subparallel, at all attitudes between horizontal and vertical.	Central and southern part of east-central Saipan, southern end of Mt Talofofo and lower east	0-30?	10-20?	The unit is the product of weathering	Gently sloping to nearly flat, with tangled grasses and occasional copses of small le-		Product of weathering of tuffaceous and, in part of marly facies of Tagpochau limestone.
	Transitional facies	Calcareous tuffaceous sandstone, marl, and calcareous andesitic conglomerate, at places	slopes of Mt. Tagpochau. 130 acres.  Mainly linear outcrops in east, just east of Machegit and Adelug cliffs, and at Hagman	0-40+	40?	Produces thin clay soil	guminous trees  Gentle slopes or parts of cliff faces, supports jungle, swordgrass, and sugarcane.	Foraminifera, corals, echinoids, and algae of early Miocene age	Clastic marine deposits, gradational between relatively pure and relatively impure calcar-
	Machegit conglomerate member	with larger Foraminifera comprising a large volume of the rock.  Andesitic conglomerate, with same quartz-rich rocks Resembles conglomerates of Densin-	and I Naftan. 90 acres East-central Saipan, narrow band at base of	0-40	20-40	Forms clay soils with rock-weathering effects ex- tending downward tens of feet. Relict textures	Low and discontinuous, sloping terrace, with cane, tangled grasses, and low brush	No fossils found, but larger Foraminifera of associated rocks are Miocene.	eous facies or to volcanic rocks.  Reworked conglomerates of the Densinyama formation
	Donni sandstone member	yama formation, but associated with and overlying beds rich in lower Miocene Foraminifera  Tuffaceous and calcareous and well-bedded and generally thinly bedded, poorly indurated sand-	(east of) Machegit cliff 40 acres  Outcrop belt on east slope of Saipan from	0-200	100+	preserved in boulders Weathers to expanding (bentonitic?) clays that	Intricate pattern of narrow ravines separated by	Globigerina, Orbulina, and many other smaller	Moderately deep marine environment adjacent
	Donn's said score member	stones, rich in smaller Foraminifera.	Achugau at north to Laulau at south Also at Fanunchuluyan, Hagman, I Naftan, and elsewhere 800 acres.			yield only a thin soil layer and are easily removed by rill wash.	short, rounded spurs Swordgrass is typical cover, but jungle, Formosan koa, and cane grow locally.	Foraminifera. Early Miocene age indicated by rare larger Foraminifera and stratigraphic associations	source area of reworked volcanic sediments
₩ (⊃ ð	Summary of formation	Well-stratified, andesitic marine tuffs and interlayered andesitic flows that are mostly less than 10 to 20 ft thick but range to 80 to 100 feet thick.	South Saipan in Fina-sisu and As Lito districts. 500 including tuffs and all flows.	0-400+ (inclusive)	7	Deeply weathered, clay soils as deep as 20 feet; few natural outcrops.	Area of outcrop gently rolling and mostly culti- vated, but locally with tangled grasses and copses of Formosan koa.	Smaller Foraminifera of the late Oligocene (Tertiary d?) Globigerinatella insueta zone. Rare discoasters and Radiolaria.	Marine tuffs and interbedded lava flows, proba deposited in moderately deep tropical waters.
GOCE NA-SIS	Thicker flow rocks	Greenish-gray, vesicular, aphanitic to finely porphyritic, augite andesite Locally with columnar jointing	South end of Fina-sisu ridge and in northwestern As Lito. 70 acres.	80-100?	90	Clay at surface, grading down to rotten rock. Joint blocks weather spheroidally	Eastern dip slopes gentle, with thick clay soil and tangled grasses. Faceted wooded spurs	Smaller Foraminifera of associated tuffs are of late Oligocene age.	Presumably submarine lava flows
9 [2]		Pure to impure, inequigranular, white to pink or dark-red clastic limestone containing a dis-	North-central Saipan, patches between Fanun-	0-500+	200-5002	Mostly similar to inequigranular facies of	and short valleys face up dip along west margin Mostly similar to inequigranular facies of	Larger Foraminifera of late Eocene (Tertiary	Clastic bank deposits of tropical marine water
ONE NE	Summary of formation White facies	tinctive upper Eocene foraminiferal assemblage  White to locally pinkish white, sparingly foraminiferal, inequigranular, generally pure, clastic	chuluyan and Talofofo. 310 acres.  North-central Saipan, mostly on east slopes,	0-300+	-	Tagpochau limestone. See above. Same as above	Tagpochau limestone. See above. Same as above	b age) Also calcareous algae and rare corals	
IMEST		limestones	patches between Fanunchuluyan and Talofofo 195 acres.	0-150	1002	Weathers to red clay soil on rough limestone	Jungle-covered scarps and sloping benches	Same as above	Same as above
NSA L	Pink facies	limestone	North-central Saipan, on both east and west slopes adjacent to Mt Achugau 85 acres.	0-150		surface.	covered with cane, brush, some jungle growth and patches of swordgrass		
MATA	Fransitional facies	Dull-white, tan or reddish-brown, tuffaceous to marly limestone and conglomerate, with locally abundant larger Foraminifera. Overlies or grades laterally to upper beds of the Densinyama formation and resembles limestone-conglomerate facies of Densinyama.	North-central Saipan, along and near Talofofo Road, on both east and west slopes of Talo- fofo ridge 30 acres.	0-140+	100?	Weathers to a thin, stony, red, neutral to slightly acid soil.	Steep slopes cut by short, narrow, steep-walled ravines. Swordgrass abundant, and casuarina forms thick stands locally	oaine as above	Same as above, but nearer to source of contamination with reworked volcanic debris.
Z	Summary of formation	Volcanic breccia, tuffaceous sandstone, calcareous sandstone, tuffaceous limestone, and con- glomerate. Rock types in fragments varied, with andesite the most abundant and quartz or	North-central Saipan and extending south through east-central Saipan in generally linear belt.	0-800±	200-600?	Forms clay soils, with rock-weathering effects extending downward tens of feet. Relict textures preserved in boulders	Rough and cut by closely spaced, steep-walled ravines at north. Less dissected to south.  Swordgrass abundant, casuarina common on	Foraminifera of late Eocene (Tertiary b) age.  Also echinoid spines and coral and algal, fragments	Mainly by reworking of preexisting volcanic all penecontemporaneous calcareous source materials in and adjacent to a tropical sea.
E	Limestone-conglomerate facies	quartzose rocks the most distinctive.  Impure limestone and calcareous conglomerate, with abundant reworked volcanic constituents	1,200 acres.  Central Saipan, on east and west slopes of	0-50±	10-20	Weathers to a thin, stony, red, neutral to	ridge crests.  Spurs and gentle to steep slopes that break to	Same as above.	Reworking of preexisting volcanic and peneco
Z S		and larger Foraminifera. Very similar to parts of transitional facies of Matansa limestone, but associated with rocks characteristic of Densinyama formation.	Mt. Talofofo. 30 acres.	0.500	1002	slightly acid soil.  Same as second box above	ravine heads or low bluffs Swordgrass thick, with copses of casuarina locally Same as second box above	A few upper Eocene Foraminifera locally	temporaneous calcareous source materials is a nearshore tropical environment.  Formed by reworking of preexisting volcanic
O A	Conglomerate-sandstone factes	Intergrading, well-stratified beds of tuffaceous sandstone and volcanic conglomerate, with interstitial calcium carbonate and marine fossils locally. Predominantly andesitic and in part with abundant free-quartz.	Same as second box above. 955 acres.	0-500±	100		'		source materials in a nearshore but in part moderately deep marine environment.
DENS	Breccia factes	Unsorted deposits of angular fragments of andesite and less abundant dacitic volcanic rocks and chert.	North-central Saipan, on east and west flanks of central and northern parts of Talofofo ridge.	0-250±	60-100?	Weathers to sticky clays on the surface of which are pebbles and cobbles of siliceous rock or spheroidally weathered andesite.	Intricately dissected, exposures common, sword- grass thrives where clay mantle present.	No fossils found, but Foraminifera from asso- ciated rocks are late Eocene	Subaerial pyroclastic deposits
-7	Summary of formation	Andesitic rocks of both subaerial and marine detrital facies, as well as massive andesite flow rock. Essentially quartz-free throughout.	215 acres.  Mainly in east- and west-central Saipan, in As Akina and Talofofo Also in southeast-central	0-1,100±	?	Forms thick clays at surface, grading downward to rotted rock with relict textures	Intricately dissected, with dense swordgrass, occasional casuarina, and local Formosan koa	Foraminifera of late Eocene (Tertiary b) age, other fossils locally	Mafic pyroclastic rocks and lava, in part rewo in a moderately deep to shallow tropical ma environment
ATIO	Conglomerate-sandstone factes	Well-stratified to poorly stratified conglomerates and sandstones, locally containing interstitial calcium carbonate and marine fossils.	south, and north-central parts. 800 acres.  East from mid-width of Saipan in central, southeast central, and south parts. Also in sea	0-400 +	?	Most outcrops in bluff faces, surface weathering yields acidic clay soils.	copses. Relief subdued in south.  Precipitous swordgrass-covered slopes and bare cliffs at Hagman and I Naftan. Elsewhere not	Foraminifera of late Eocene age. Also calcareous algae, discoasters, and Radiolaria	Reworked pyroclastic deposits which came to rest nearshore in shallow to moderately dee
FORM	Breccia-tuff factes	Poorly consolidated, largely unstratified and andesitic breccias and tuffs that lack fossils and	bluffs at Hagman and I Naftan 270 acres  Central and southeast Saipan In south Talofofo	, 0-600+	7	Forms iron-stained clays with rock alteration	distinctive In general is intricately dissected, with sword-	No fossils found, but Foraminifera from asso-	marine water. Subaerial pyroclastic deposits
SMAN	Flow rock factes	interstitial calcium carbonate.	north As Akına and Mt Laulau 520 acres	0-100	60-80>	extending tens of feet downward. Matrix more weathered than included fragments.  Clay at surface grades down to rotten rock	grass cover, scattered casuarina, and local copses of Formosan koa.  Outcrop areas too small to develop distinctive	crated rocks are late Eocene. Foraminifera from associated rocks are late	Andesitic lava flows
HA	FIGW TOCK FACIES	Massive, gray to greenish-gray, coarsely porphyritic, augite-hypersthene andesite in tabular bodies that range from 30 to 80 ft. thick. Also olive-gray, finely porphyritic, vesicular, augite andesite.	Small patches in east- and west-central Saipan. 10 acres.		00-00°		characteristics.	Eocene.	
ž	Summary of formation	Dacitic rocks, mainly breccias and massive flow rocks. Glassy, in part conspicuously laminated and locally vesicular.	North-central Saipan, at Mt. Achugau and to about 1 mile east and south from it 455 acres	7-1,800+	,	Only locally altered to clay where vesicular or tuffaceous.	Steep, rough, and rocky, with swordgrass or xerophytic ferns, and local copses of casuarina	No fossils. Inferred to be Fertiary because of abundance of tridymite and cristobalite in the rocks.	lava flows
(°)	Mixed pyroclastic facies	Well-bedded silicic tuffs and breccias, commonly cross bedded, and with unusual "brick-work" sedimentary structure.	Islet of Margo Fahang and sea cliffs at south Fanunchuluyan beach 5 acres	?-160+	7	Unweathered	Bare sea-facing bluffs and sea level bench, capped by resistant rocks.	Same as above	Water-laid(?) pyroclastic debris
N N N	Tuff facies	Thinly bedded, glassy tuffs and lapilli tuffs comprised of angular particles of dacite vitrophyre, quartz, dacite and glass shards and small grains of quartz, oligoclase, and magnetite.	Minor occurrences in north-central Saipan, at upper Nanasu and north Fahang ravines, and	?-400+	7	Weathers at surface to 1 to 5 ft of acidic reddish- brown clay soil	Gentle swordgrass-covered slopes breaking to 150-ft cliffs in upper Nanasu ravine.	Same as above	Subaerial volcanic ash and lapilli
UYAWA	Breccia facies	Mostly banded and laminated, gray to white breccias and flow breccias of angular to subrounded fragments of dacite vitrophyre and perlite in a glassy tuffaceous matrix. Most of facies is	at Mt Achugau. 10 acres  Parches occur through outcrop area of formation in north-central Saipan 240 acres	?-400+	7	Locally altered to clay where vesicular or tuf- faceous Mainly of fresh appearance	Steep to gentle, rocky slopes cut by steep- walled ravines. Supports swordgrass,	Same as above	Subaerial pyroclastic debris and autoclastic f
E O NKAKU	Flow rock factes	vitrophyric, some is also perlitic.  Tabular or lens-shaped bodies of massive, glassy quartz dacite of chocolate, reddish, or pink-	Patches occur through outcrop area of formation	0-500?	7	Essentially unweathered except for partial de-	xerophytic ferns, and local casuarina Generally caps prominent rocky ridges and hills. Vegetation sparse swordgrass or xerophytic	Same as above	Viscous lava flows and domal protrusions
13		ish color. Observed areal dimensions of individual bodies not exceeding 1/4 mile.	in north-central Saipan. 200 acres.	(individual flows to 60 ft.)		vitrification of dacite glass	fern.		